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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/713,834	11/15/2000	Hassan S. Hashemi	00CON159P	1030
25700	7590	10/27/2003	EXAMINER	
FARJAMI & FARJAMI LLP			CRUZ, LOURDES C	
16148 SAND CANYON			ART UNIT	
IRVINE, CA 92618			PAPER NUMBER	

2827

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/713,834	HASHEMI, HASSAN S.	
	Examiner	Art Unit	
	Lourdes Cruz	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on An RCE filed 05-16-2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-33 and 58-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-33 and 58-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>34</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-20,22-33, and 58-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Selna (US 5640048).

Selna discloses (See cover Fig.) a structure comprising:

A substrate 52,54 having a top surface for receiving a chip 12; a printed circuit board 18 attached to a bottom surface of said substrate; at least one signal via 6A in said substrate; said at least one signal via providing an electrical connection between a device electrode (on 12, connected to 22/24) of said chip and said printed circuit board;

A plurality of separate thermally conductive vias 6C in said substrate; each of said plurality of separate thermally conductive vias being coupled to a heat spreader 10C, said heat spreader being directly attached to said bottom surface of said substrate. See that the plurality of thermally conductive vias provides a connection between said chip and said heat spreader (see layer 8C).

Selna also discloses:

- Said chip being a semiconductor chip
- Said substrate comprises organic/ceramic material (Col. 1, lines 15+)

- Said at least one signal via 6A provides an electrical connection between a bond pads 8A and said PCB 18, wherein said bond pad is electrically connected to said device electrode (through wire 22/24)
- Said signal via abuts the bond pad
- Said bond pad electrically connected to said device electrode by a bonding wire 22/24
- Said at least one signal via provides an electrical connection between said device electrode and a land 10A, said land being electrically connected to said PCB (through 14A)
- Said via abuts said land
- Said at least one signal/thermally conductive via comprises Copper (Col. 6, line 35), which is a thermally conductive material
- See that the heat slug/spreader of Selna is attached to the PCB
- A second plurality of signal vias 6B providing connection between a plurality of device electrodes (on 12, connected to 22/24) of said semiconductor chip 12 and said PCB
- Each of said bond pads is electrically connected to a respective one of the device electrodes
- Said second plurality of signal vias provide electrical connections between each one of said plurality of device electrodes and a

respective one of said lands 10B, said lands being electrically connected to said PCB (through 14B)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selna.

See that Selna discloses organic ceramic material for the substrate. However, the claim specifically recites materials such as FR4. These materials are well known and widely used among semiconductor artisans. See that Applicant admits that such materials are well known in the art on page 5 of the present application, and that such materials are not considered to be Applicant's invention due to this admission. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate materials such as FR4 to the claimed invention since they are readily available, they are well known and widely used in the art as explained above, and because such is admitted by Applicant in the disclosure.

Response to Arguments

Applicant's arguments filed 05-16-2003 have been fully considered but they are not persuasive. Applicant argues that:

- "package trace 10C is not a heat spreader, but rather is an electrical trace between vias 6C and traces 14C"
- "the arrangement wherein the heat spreader is directly attached to the bottom surface of the substrate" is not disclosed by Selna

The above arguments are not persuasive because:


- The metal trace 10C disclosed by Selna dissipates heat, and it is therefore a heat spreader.
- Moreover, labels, statements of intended use, or functional language such as we have here in "heat spreader" does not structurally distinguish the claim over the prior art which shows a structure that may likewise be labeled, used or function as a heat spreader rather than a "trace". See *In re Pearson* 181 USPQ 641, *Ex parte Minks* 169 USPQ 120, and *In re Swinwhart* 169 USPQ 226.
- Additionally, see that 10 C is directly attached to the bottom of the substrate


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elle Cruz whose telephone number is 703-306-5691. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammand Cuneo can be reached on 703-308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Lourdes Cruz
Examiner
Art Unit 2827


Elle Cruz
October 6, 2003


EVAN PERT
PRIMARY EXAMINER